FEDERAL SUPPLY CLASS
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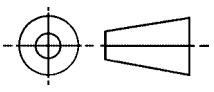
ISSUED 1998-07 REVISED 1999-11

THIRD ANGLE PROJECTION



PREPARED BY SUBCOMMITTEE AE-8C2

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE STANDARD

TERMINAL, LUG, CRIMP STYLE, COPPER, UNINSULATED, RING TONGUE, TYPE I, CLASS I, FOR 175°C TOTAL CONDUCTOR TEMPERATURE

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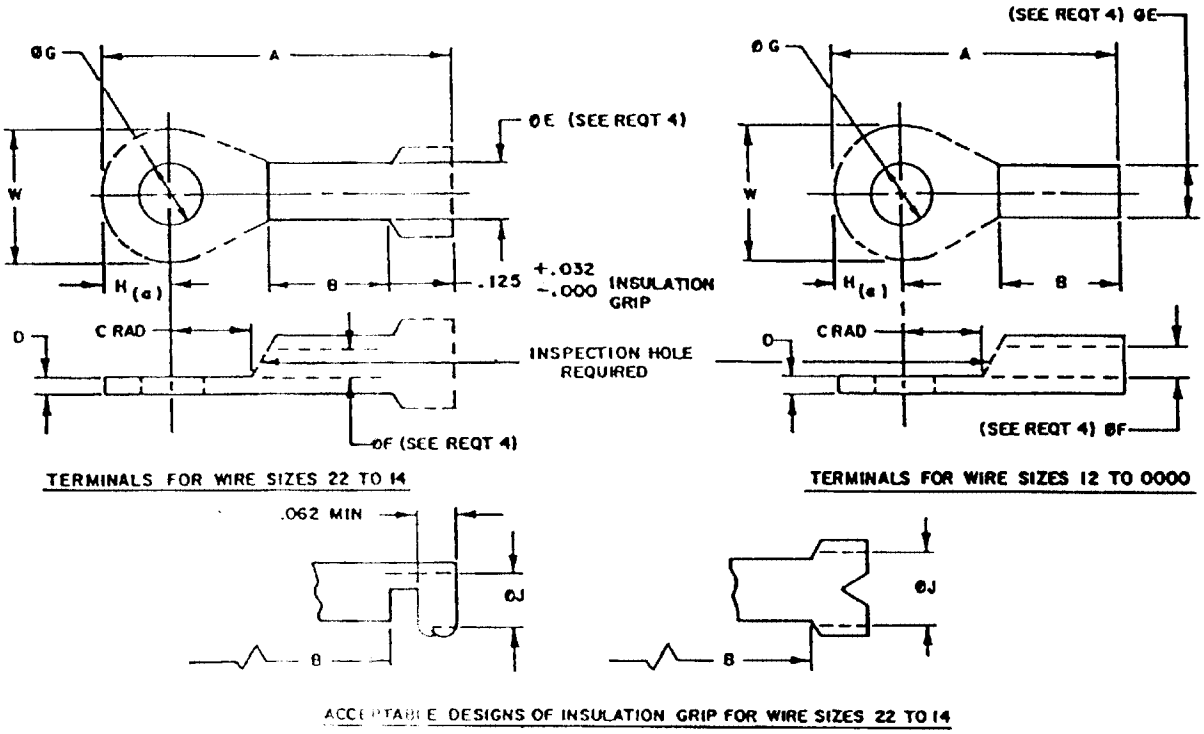
THE REQUIREMENTS FOR ACQUIRING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF MIL-T-7928 LISTED IN THAT ISSUE OF THE DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS (DoDISS) SPECIFIED IN THE SOLICITATION.



ACCEPTABLE DESIGNS OF INSULATION GRIP FOR WIRE SIZES 22 TO 14

NOTES:

1. "H" MAX AND MIN DIMENSION SHALL BE ONE-HALF OF "W" MAX AND MIN DIMENSIONS, RESPECTIVELY.
2. CONTOUR INDICATED BY PHANTOM LINES MAY VARY FROM THAT SHOWN TO SUIT INDIVIDUAL MANUFACTURER'S DESIGN.
3. WHERE SPLIT BARREL CONSTRUCTION IS USED, THE SPLIT SHALL BE PERMANENTLY SEALED AND NOT OPEN AS THE RESULT OF CRIMPING.
4. DIMENSIONS ARE IN INCHES.
5. METRIC EQUIVALENTS (TO THE NEAREST .01 MM) ARE GIVEN FOR GENERAL INFORMATION ONLY AND ARE BASED UPON 1 INCH = 25.4 MM.

FIGURE 1. INSULATION GRIP AND TERMINALS

REQUIREMENTS:

1. MATERIAL: SOFT COPPER, QQ-C-502, CLASS A.
   COPPER TUBING, ASTM B75-68.
   GILDING METAL, 95 PERCENT COPPER, 5 PERCENT ZINC.

2. FINISH: TIN-PLATED. SEE ACQUISITION SPECIFICATION.

3. QUALIFICATION TESTING: FOR QUALIFICATION, TERMINALS SHALL BE TESTED WITH ANY ONE OF THE FOLLOWING WIRES: MIL-W-5086, MIL-W-16878, MIL-W-22759/1, 9 OR 11, OR MIL-W-81381/1, 3 OR 7. TERMINALS SHALL BE TESTED WITH TOOLING AS FOLLOWS: MIL-C-22520/24 HAND CRIMPING TOOL FOR SIZES 22 THROUGH 10; MS25441 CRIMPING TOOL AND MS90485 CRIMPING DIES FOR SIZE 8 AND LARGER. MIL-C-2194 CABLES SHALL BE USED FOR TESTING MS20659-161 THROUGH MS20659-166 TERMINALS WITH MIL-C-22520/25 CRIMPING TOOL AND MIL-C-22520/24 CRIMPING TOOL.

4. AVERAGE DIAMETER OF “E” AND “F” SHALL BE WITHIN SPECIFICATION DIMENSIONS: MAX AND MIN DIMENSIONS DUE TO OVALIZATION SHALL BE WITHIN 3% OF SPECIFICATION REQUIREMENTS.

NOTES:

1. TABLE 1 SHOWS DASH NUMBERS AND DIMENSIONS. TABLE II SHOWS THE RELATIONSHIP BETWEEN WIRE SIZE AND NAVY CABLE SIZE.

2. MS20659-1 THRU -61 DASH NUMBERS COVERED BY REVISION B, DATED 23 MAY 1963, ARE CANCELLED AFTER 1 MARCH 1969.

3. INTERCHANGEABILITY RELATIONSHIP: DASH NUMBERS MS20659-101 THROUGH -161 CAN REPLACE THE CANCELLED MS20659-1 THROUGH -61 PARTS, RESPECTIVELY. THE CANCELLED MS20659-1 THROUGH -61 PARTS CAN NOT ALWAYS REPLACE THE MS20659-101 THROUGH -161 PARTS. EXISTING GOVERNMENT STOCK OF CANCELLED PARTS MAY BE USED UNTIL EXHAUSTED.

4. CERTAIN PROVISIONS OF THIS SPECIFICATION SHEET ARE THE SUBJECT OF INTERNATIONAL STANDARDIZATION AGREEMENT (ASCC AIR STD 12/4). WHEN AMENDMENT, REVISION, CANCELLATION OF THIS SPECIFICATION SHEET IS PROPOSED WHICH WILL MODIFY THE INTERNATIONAL AGREEMENT CONCERNED, THE PREPARING ACTIVITY WILL TAKE APPROPRIATE RECONCILIATION ACTION THROUGH INTERNATIONAL STANDARDIZATION CHANNELS, INCLUDING DEPARTMENTAL STANDARDIZATION OFFICES, TO CHANGE THE AGREEMENT OR MAKE OTHER APPROPRIATE ACCOMMODATIONS.

5. THE CHANGE BAR (l) LOCATED IN THE LEFT MARGIN IS FOR THE CONVENIENCE OF THE USER IN LOCATING AREAS WHERE TECHNICAL REVISIONS, NOT EDITORIAL CHANGES, HAVE BEEN MADE TO THE PREVIOUS ISSUE OF THIS DOCUMENT. AN (R) SYMBOL TO THE LEFT OF THE DOCUMENT TITLE INDICATES A COMPLETE REVISION OF THE DOCUMENT.

TABLE I. DASH NUMBERS AND DIMENSIONS.

DASH NO.	WIRE SIZE	STUD SIZE	A MAX	B MIN	C MIN RAD	D MAX	D MIN	ØE	ØF	ØG MAX	ØG MIN	ØJ MIN	W MAX	W MIN	MIL-E-16366 (SHIPS) REFERENCE
167	22-18	2(.086)	.890	.250	.115	.045	.023	.140 .115	.073 .052	.098	.090	.120	.260	.178	
138		4(.112)			.125					.122	.114		.210		L 33, 1-2
101		6(.138)			.172					.152	.142				
102		10(.190)	.968		.172					.203	.193		.320	.305	L 35, 1-2
161		5/16(.312)	1.187		.284					.338	.323		.540	.450	L 65, 1-2
162		3/8(.375)	1.309		.328					.400	.385		.540	.520	L 66, 1-2
163		1/2(.500)	1.530		.378					.525	.510		.733	.703	L 67, 1-2
139	16-14	4(.112)	.947	.250	.125	.053	.029	.162 .145	.095 .081	.122	.114	.153	.265	.234	
103		6(.138)	.955		.172					.152	.142		.327	.297	L 33, 2-1/2-4
126		6(.138)	.947		.125								.266	.234	
104		10(.190)	.955		.172					.203	.193		.327	.234	L 36, 2-1/2-4
163		5/16(.312)	1.249		.284					.338	.323		.540	.450	L 65, 2-1/2-4
127		3/8(.375)	1.290		.328					.400	.385		.540	.520	L 66, 2-1/2-4
164		1/2(.500)	1.593		.378					.525	.510		.733	.703	L 67, 2-1/2-4
165	12-10	6(.138)	.955	.250	.202	.080	.037	.230 .210	.139 .129	.152	.142		.317	.290	
105		10(.190)	.969		.172					.203	.193		.391	.365	L 33, 6-9
106		5/16(.312)	1.156		.296					.338	.323		.547	.485	L 35, 6-9
128		3/8(.375)	1.172		.328					.400	.385		.598	.536	L 65, 6-9
166		1/2(.500)	1.718		.378					.525	.510		.733	.703	L 67, 6-9
140	8	8(.164)	1.150	.315	.234	.084	.038	.272 .260	.185 .176	.178	.168		.429	.386	
107		10(.190)								.203	.193				
141		1/4(.250)	1.219		.265					.275	.260		.478	.435	
108		5/16(.312)	1.297		.296					.338	.323		.590	.547	
129		3/8(.375)			.328					.400	.385		.590	.547	
142		1/2(.500)	1.545		.440					.525	.510		.833	.680	
130	6	10(.190)	1.312	.375	.238	.084	.043	.316 .295	.232 .222	.203	.193		.503	.460	
109		1/4(.250)			.265					.275	.260				
131		5/16(.312)	1.437		.305					.338	.323		.623	.580	
110		3/8(.375)			.328					.400	.385				
143		1/2(.500)	1.676		.440					.525	.510		.833	.700	
144	4	10(.190)	1.400	.437	.276	.096	.047	.380 .365	.290 .280	.203	.193		.628	.480	
111		1/4(.250)								.275	.260				
132		5/16(.312)	1.489		.308					.338	.323		.648	.605	
112		3/8(.375)			.328					.400	.385				
145		1/2(.500)	1.721		.440					.525	.510		.833	.710	

TABLE I. DASH NUMBERS AND DIMENSIONS - CONTINUED.

DASH NO.	WIRE SIZE	STUD SIZE	A MAX	B MIN	C MIN RAD	D MAX	D MIN	ØE	ØF	ØG MAX	ØG MIN	ØJ MIN	W MAX	W MIN
146		10(.190)								.203	.193			
147		1/4(.250)	1.732	.565	.343	.129	.070	.423	.355	.275	.260		.711	.668
114	4	5/16(.312)						.450	.355	.338	.323			
148		3/8(.375)	1.895		.453					.400	.385		.804	.740
133		7/16(.437)								.463	.448			
		1/2(.500)								.525	.510			
115		1/4(.250)	1.845	.565	.383	.125	.070	.527	.398	.275	.260		.783	.740
149		5/16(.312)						.505	.388	.338	.323			
116	1	3/8(.375)								.400	.385			
150		7/16(.437)	1.980		.453					.463	.448		.887	.740
134		1/2(.500)								.525	.510			
117		1/4(.250)	2.045	.630	.418	.125	.070	.578	.458	.275	.260		.853	.810
151		5/16(.312)						.558	.438	.338	.323			
118	0	3/8(.375)								.400	.385			
152		7/16(.437)	2.092		.453					.463	.448		.903	.860
135		1/2(.500)								.525	.510			
153		1/4(.250)	2.320	.700	.473	.129	.075	.640	.520	.275	.260		.956	.913
119		5/16(.312)						.620	.500	.338	.323			
120	00	3/8(.375)								.400	.385			
154		7/16(.437)								.463	.448			
136		1/2(.500)								.525	.510			
155		5/16(.312)	2.455	.718	.513	.140	.085	.714	.577	.338	.323		1.053	1.010
121	000	3/8(.375)						.690	.557	.400	.385			
156		7/16(.437)								.463	.448			
122		1/2(.500)								.525	.510			
157		5/16(.312)	2.755	.734	.560	.150	.095	.784	.645	.338	.323		1.148	1.095
123		3/8(.375)						.760	.622	.400	.385			
158		7/16(.437)								.463	.448			
124	0000	1/2(.500)								.525	.510			
159		5/8(.625)								.666	.651			
160		3/4(.750)	2.955		.765					.785	.770		1.268	1.200
137		7/8(.875)	2.971							.910	.895			

INCH	mm	INCH	mm	INCH	mm
.023	0.58	.297	7.54	.645	16.38
.029	0.74	.305	7.75	.648	16.46
.032	0.81	.308	7.82	.651	16.54
.037	0.94	.312	7.92	.666	16.92
.038	0.97	.315	8.00	.668	16.97
.043	1.09	.316	8.03	.680	17.27
.045	1.14	.317	8.05	.690	17.53
.047	1.19	.320	8.13	.700	17.78
.052	1.32	.323	8.20	.703	17.86
.053	1.35	.327	8.31	.710	18.03
.054	1.37	.328	8.33	.711	18.06
.062	1.57	.338	8.59	.714	18.14
.070	1.78	.343	8.71	.718	18.24
.073	1.85	.365	9.27	.733	18.62
.075	1.91	.375	9.53	.734	18.64
.080	2.03	.378	9.60	.740	18.80
.084	2.13	.380	9.65	.750	19.05
.085	2.16	.385	9.78	.760	19.30
.086	2.18	.386	9.80	.765	19.43
.095	2.41	.388	9.86	.770	19.56
.096	2.44	.391	9.93	.783	19.89
.109	2.77	.398	10.11	.784	19.91
.112	2.84	.400	10.16	.785	19.94
.114	2.90	.418	10.62	.804	20.42
.115	2.92	.429	10.90	.810	20.57
.122	3.10	.435	11.05	.833	21.16
.125	3.18	.437	11.10	.853	21.67
.129	3.28	.438	11.13	.860	21.84
.138	3.51	.440	11.18	.875	22.23
.139	3.53	.448	11.38	.887	22.53
.140	3.56	.450	11.43	.890	22.61
.142	3.61	.453	11.51	.895	22.73
.145	3.68	.458	11.63	.903	22.94
.152	3.86	.460	11.68	.910	23.11
.153	3.89	.463	11.76	.913	23.19
.162	4.11	.473	12.01	.947	24.05
.164	4.17	.478	12.14	.955	24.26
.168	4.27	.480	12.19	.956	24.28
.172	4.37	.485	12.32	.968	24.59
.176	4.47	.500	12.70	.969	24.61
.178	4.52	.503	12.78	1.010	25.65
.186	4.72	.505	12.83	1.053	26.75
.190	4.83	.510	12.95	1.095	27.81
.193	4.90	.520	13.21	1.150	29.21
.202	5.13	.525	13.34	1.156	29.36
.203	5.16	.527	13.39	1.172	29.77
.210	5.33	.536	13.61	1.187	30.15
.216	5.49	.540	13.72	1.200	30.48
.230	5.84	.547	13.89	1.219	30.96
.232	5.89	.558	14.17	1.249	31.72
.234	5.94	.560	14.22	1.268	32.21
.238	6.05	.565	14.35	1.290	32.77
.250	6.35	.577	14.66	1.297	32.94
.260	6.60	.578	14.68	1.308	33.22
.265	6.73	.580	14.73	1.312	33.32
.266	6.76	.590	14.99	1.400	35.56
.272	6.91	.598	15.19	1.437	36.50
.275	6.99	.605	15.37	1.489	37.82
.276	7.01	.620	15.75	1.530	38.86
.280	7.11	.622	15.80	1.545	39.24
.284	7.21	.623	15.82	1.593	40.46
.290	7.37	.625	15.88	1.676	42.57
.296	7.52	.628	15.95	1.718	43.64
		.630	16.00	1.721	43.71
		.640	16.26		

TABLE II. WIRE SIZE IN RELATION TO NAVY CABLE SIZE.

TABLE II. (REF).

SIZE	NAVY CABLE SIZE	
22-18	1	(1)
	1	(7)
	1	(10)
	1-1/2	(1)
	1-1/2	(7)
	1-1/2	(16)
	1-1/2	(41)
	2	(7)
16-14	2-1/2	(1)
	2-1/2	(19)
	2-1/2	(26)
	3	(7)
	4	(1)
	4	(19)
	4	(7)
	4	(41)
12-10	6	(7)
	6	(19)
	9	(7)
	9	(37)